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# Online sexual deviance, pornography and child sexual exploitation material

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## Abstract

Definitions of sexual deviance have changed over time and the more recent use of paraphilia and paraphilic disorder in the development of DSM-5 has been met with criticism. The larger context of this discussion lies in the use of sexually explicit media (SEM), whether this can be seen as normative rather than deviant, and its relationship with sexual violence. The use of sexual media depicting children (CSEM) has been seen as a good diagnostic indicator of paedophilia, but clearly not all people who possess CSEM can be classified as paedophiles. However, possession and trading of CSEM may provide evidence of specific sexual interests and there is some evidence to suggest that there may be a potential homology between CSEM possession, victim selection and offending behaviour. The article explores how sexual interest in children is evidenced and the challenges in understanding the prevalence of these activities both in the community as well as forensic and clinical samples.

**Keywords** Sexual dysfunctions, psychological · Sex offenses · Mental disorders · Paraphilic disorders · Paraphilia

## Sexuelle Devianz im Internet, Pornographie und Material zum sexuellen Kindesmissbrauch

### Zusammenfassung

Die Definitionen von sexueller Devianz haben sich im Laufe der Zeit verändert, und die jüngere Verwendung der Begriffe Paraphilie und paraphile Störung bei der Entwicklung von DSM-5 ist auf Kritik gestoßen. Der weitere Kontext dieser Diskussion liegt in der Verwendung von „sexually explicit media“ (SEM), ob diese als normativ und nicht als deviant angesehen werden können, und welcher Zusammenhang mit sexueller Gewalt besteht. Die Verwendung sexueller Medien, die Kinder darstellen (CSEM), wurde als ein guter diagnostischer Indikator für Pädophilie angesehen, aber offensichtlich können nicht alle Menschen, die CSEM besitzen, als pädophil eingestuft werden. Der Besitz und Handel mit CSEM kann jedoch Hinweise auf spezifische sexuelle Interessen liefern, und es gibt einige Anhaltspunkte dafür, dass es eine potenzielle Homologie zwischen CSEM-Besitz, Opferauswahl und belästigendem Verhalten geben könnte. Dieser Beitrag erforscht, wie sexuelles Interesse an Kindern nachgewiesen wird und untersucht die Herausforderungen beim Verständnis der Prävalenz dieser Aktivitäten, sowohl in der Community als auch bei forensischen und klinischen Proben.

**Schlüsselwörter** Sexuelle Dysfunktion, psychologisch · Sexuelle Belästigung · Mentale Störung · Paraphile Störung · Paraphilie

## Deviant sexual interests and paraphilias

Over the years defining sexual deviance has proved challenging (Bartels et al. 2011) although one common criterion relates to the unusual nature of the source of sexual arousal either in terms of the activity itself or the target of the activity (Van Bommel et al. 2018) and has been used to refer to patterns of sexual arousal which are thought to predispose an individual to sexual offending (Thornton et al. 2018).

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It has been suggested that psychiatry's relationship with the concept of sexual deviance has resulted in movement between two opposing viewpoints: sexual deviance as an abnormality that constitutes a disease, or perversions that are biologically normal sexual variants (Grijs 2008). As such, a range of sexual preferences, desires and behaviours have been pathologised (and also de-pathologised) in an attempt to distinguish mental disorders (often labelled perversions, deviations and paraphilias) from what have been seen as immoral, unethical or illegal activity (De Block and Adriaens 2013).

The latest version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association (APA), 2013) uses the term paraphilia which “denotes any intense and persistent sexual interest other than sexual interests in genital stimulation or preparatory fondling with phenotypically normal, physically mature, consenting human partners” (p685) and lists eight forms of paraphilia, including sexual sadism, frotteurism, voyeurism, exhibitionism, and paedophilic disorders. This is distinguished from a paraphilic disorder described as “concurrently causing distress or impairment to the individual (and) whose satisfaction has entailed personal harm, or risk of harm to others” (p685). Marshall and Kingston (2018) have been highly critical of the predictive validity of the categories proposed in this model with Moser (2019) going as far as suggesting that, “Asexual individuals, who are not interested in genital stimulation or preparatory fondling, could paradoxically be ascertained to have a paraphilia if they have an interest in nongenital contact (hugging, kissing, stroking, etc.) with a partner, which is not preparatory to coitus” (p684). What seems relevant to this is that research from community samples would seem to suggest that paraphilia-associated sexual arousal cannot be viewed as non-normative solely on the basis of prevalence. For example, in a community-based survey of 367 German men, nearly two-thirds indicated at least one paraphilia-associated sexual arousal with only 1.7% of these reporting accompanying awareness or distress. Paedophilic sexual fantasies or behaviour were reported by 9.5 and 3.5% respectively (Ahlers et al. 2011). Similar levels of paraphilic fantasies have been found in other community studies (e.g. Joyal 2015; Noorishad et al. 2019). A further Canadian study by Joyal and Carpentier (2017) of 1040 men and women from a representative community sample found that approximately half of the sample indicated an interest in at least one paraphilia and approximately one-third had engaged in paraphilic-related behaviour at least once. Voyeurism, fetishism, frotteurism, and masochism interested both genders and levels of interest in fetishism and masochism were not significantly different for men and women. The authors felt that these results called into question definitions of normophilic versus paraphilic sexual be-

haviours. A systematic review of the prevalence of frotteurism (sexual arousal from touching or rubbing against a non-consenting person) found that in samples of non-clinical males the rates of self-reported frotteurism varied between 7.9% and 9.7%, with one study indicating a rate of 35% (Johnson et al. 2014). One of the most widely studied paraphilias is paedophilia (sexual interest in prepubescent children) which, although considered illegal in most jurisdictions, is also seen in the general population. More recently there has been a call to move away from the narrow definition provided by categorical models such as DSM to terminology such as paedo-hebephilia (Bailey et al. 2016) or minor-attracted persons (Stevens and Wood 2019). Both include a sexual attraction to age groups other than only prepubescent children.

## Pornography, deviance and violence

With almost universal access to the Internet in high income countries and the proliferation of smartphone technology, pornography is more accessible, anonymous and diverse than ever before (Davis et al. 2018; Klein and Cooper 2019). What constitutes pornography varies across research although Hald (2006) in a study of young Danish adults differentiated between images of “posed adults” and material which aimed to create or enhance sexual feelings or thoughts and contained both explicit exposure and/or descriptions of the genitals and clear and explicit sexual acts such as vaginal intercourse, anal intercourse, oral sex, masturbation, bondage, sado-masochism, rape, urine sex and animal sex. The definition included etcetera, but made explicit reference to two forms of pornography which are usually seen as both deviant and illegal: rape and animal sex. Data from Porn Hub (2019), which claims to be the world's largest free pornography site (images and videos), reported in 2019 over 42 billion visits, with a year-on-year increase in searches, downloads and content uploaded to their site. While not illegal, they host sexually explicit media (SEM) which for many may be considered deviant. Frequently used search terms on the site include hentai (overtly sexualised manga), anal, teen, public, and gangbang. One of the most popular categories of SEM is POV, where someone holds the camera themselves and photographs their genitals during any sexual act, with the viewer vicariously experiencing the act (Brodesco 2016).

This is not to suggest that viewing pornography is in itself deviant or is associated with negative psychosocial outcomes. Research by Charig et al. (2020) examined the relationship between online sexually explicit material (SEM) and psychological outcomes: sexual satisfaction, body satisfaction, sexist attitudes and mental well-being. Participants were 252 adults recruited from universities and online who

were asked how often in the last three months they had intentionally looked at (1) pictures with clearly exposed genitals, (2) videos with clearly exposed genitals, (3) pictures in which people were having sex, (4) video clips in which people were having sex. They also included some of the items used by Hald (2006) but these were not specified. Their results indicated no significant indirect or direct relationships between online SEM use and any of the psychosocial outcomes and appeared to have a negligible role in current sexual functioning and mental well-being. Similarly, Landripet et al. (2019) in a longitudinal study of 248 male adolescents found that a preference for violent/coercive pornography decreased over time and was unrelated to latent growth in pornography use. The authors noted limitations in this study, but still argued for the importance of sexual education and media literacy programs aimed at a more critical evaluation of sexual media content and its potential adverse outcomes.

Clearly not all SEM are equal and some (for example “teen” images and videos) may be bordering on illegal or created to give the impression that they really are of minors rather than adults (e.g. Peters et al. 2014). An online study from Australia asking how frequently young, heterosexual adults saw a range of pornographic media over the previous 12 months reported that a significantly higher proportion of respondents indicated seeing violence than romance/affection when they watched pornography (Davis et al. 2019b). The violence was largely directed towards women. Pornography associated with deviance and violence is not new. Barron and Kimmel (2000) measured the level of sexually violent content, the amount of consensual and non-consensual activity, and the gender of what they described as victim and victimizer in magazines, videos and Newsnet (Internet newsgroups). There was a consistent increase in the amount of violence from one medium to the next. In both magazines and videos sampled, violence was portrayed as consensual whereas in Usenet it appeared to be largely non-consensual and being inflicted by men. This study is not without its limitations (the Usenet group was largely made up of text) but it does suggest that SEM may have changed across each technical development which may be associated with attitudes and behaviours that support some forms of violence. More recently, Vogels and Sullivan (2019) in a general population survey looked at exposure to “rough sex” in SEM and its relationship with a desire for, or participation, in the same. Their definition of “rough sex” included hair pulling, spanking, scratching, biting, bondage, fisting, and double penetration. While their survey could not examine causality or directionality, exposure to this content in SEM was associated with a desire for and participation in “rough sex”.

Concerns about the impact of violent SEM on sexual behaviour led to a new criminal offence in the UK of possess-

ing extreme pornography (Criminal Justice and Immigration Act 2008) and later amended to include rape pornography. Under this act an extreme pornographic image is defined as one that: (a) “portrays, in an explicit and realistic way;” (b) acts which are life-threatening, or result, or are likely to result, in serious injury to a person’s anus, breasts or genitals, or portray rape or other forms of non-consensual sexual penetration, as well as images of bestiality and necrophilia; and the images must be (c) “grossly offensive, disgusting, or otherwise of an obscene character”. McGlynn and Bows (2019) used freedom of information requests to look at the characteristics of those charged under this act, as well as types of pornography used (591 cases). Of importance, to meet the criteria for extreme pornography the images must *appear* to be real. Of 366 cases, 85% related to bestiality. The majority of men charged were 20–50 years old but included 21 under the age of 16 and 11 over the age of 70. For over half of 125 cases where data was available, an additional offence was recorded most of which were sexual, although it was unclear from police data whether these were Child Sexual Exploitation Material (CSEM) offences.

The relationships between SEM, sexually violent media (SVM) and behaviour is inconclusive, although a recent critical review of 43 studies using adolescent and young adult samples did find that exposure to SEM and SVM is associated with more accepting attitudes to dating and sexual violence (Rodenhizer and Edwards 2019) and positively related to actual and anticipated dating and sexual violence victimization, perpetration, and bystander non-intervention. Pre-existing attitudes to dating and sexual violence, and media preferences, moderated these relationships. A meta-analysis of the relationship between pornography consumption and acts of sexual aggression in general population studies (Wright et al. 2016) indicated that SEM was associated with sexual aggression (verbal and physical) in both males and females, and in cross-sectional and longitudinal studies. They concluded that violent content may be an exacerbating factor in sexual violence as opposed to a causal factor. An earlier review by Seto et al. (2001) noted the difficulties in operationally defining what constitutes pornography but argued that people who are already predisposed to sexually offend are the most likely to show an effect of pornography exposure and are the most likely to show the strongest effects. In a similar vein, Malamuth (2018), when examining existing studies that had examined the effect of exposure to non-consenting adult pornography and CSEM, found converging evidence that pornography use may add to the risk of sexual aggression but only for those men already predisposed to aggress sexually due to more primary causes than pornography use.

## Online deviance, paedophilic interests and CSEM

A recent collaborative report from IT industry and child protection agencies (Google, NCMEC and Thorn) indicated a growth of detected CSEM, an expanding international scope of abuse, and the evolution of technologies and mediums used to create and distribute CSEM online. This study used anonymised metadata associated with the 23,494,983 NCMEC (US National Center for Missing and Exploited Children) reports related to suspected CSEM that were received from 1998 until 2017 (Bursztein et al. 2019). While there are limitations with the use of the NCMEC database which may bias the results, the study does provide a good indicator of the how CSEM reports have evolved. As we will go on to discuss, in terms of sexual deviance, these images and their content are potentially the best indicator that we have of online sexual deviance related to children. Online child sexual materials and activities are, across most jurisdictions, illegal and associated with paedophilia and hebephilia (Seto, 2008; Seto et al. 2006). Much of what we know is drawn from forensic samples but general population studies have examined the prevalence and correlates of CSEM activities. Seto et al. (2015) used a population-representative sample of 1978 young Swedish men (aged 17–20) and indicated that 4.2% of their sample had viewed CSEM. Using a multivariate logistic regression analysis, 7 of 15 tested factors independently predicted CSEM viewing and explained 42% of the variance. These included the following: ever had sex with a male, likely to have sex with a child aged 12–14, likely to have sex with a child 12 or less, a perception of children as seductive, having friends who have watched child pornography (CSEM), frequent pornography use, and ever having viewed violent pornography. A further study by Dombert et al. (2016) using an online survey of 8718 German men found that 4.1% reported sexual fantasies involving prepubescent children, 3.2% reported sexual offending against prepubescent children, and 0.1% reported a paedophilic sexual preference. Sexual fantasies of prepubescent children were also positively associated with sexual offending against children (most frequently CSEM-use). However, as noted by Seto (2010) not all persons admitting sexual interest in children would meet the necessary DSM-5 diagnostic criteria for paedophilic disorder in terms of symptom intensity and persistence and only 20–50% of people who commit sexual offences against children can be classified as paedophilic (Gerwinn et al. 2018; Schmidt et al. 2013). It is also the case that many men who self-identify as having paedophilic interests do not engage in sexual activity with children or CSEM use (Cohen et al. 2018) and evidence higher inhibition (Kärgel et al. 2016).

Seto (2010) argued for the relevance of CSEM-use and internet solicitation when considering a diagnosis of pae-

dophilia. Seto et al. (2006) examined whether being charged with a CSEM offence is a valid diagnostic indicator of paedophilia as represented by an index of phallometrically assessed sexual arousal to children in 685 people referred for a sexological assessment of sexual interests and behaviour. CSEM-offenders showed greater sexual arousal to children than adults and differed from groups who committed contact sexual offences against children, sex offences against adults and general sexology patients. They concluded that CSEM offending is a stronger indicator of paedophilia than contact sex offending against a child. Sexual stimuli included both images (slides) and audiotaped narratives in the phallometric test. One explanation for these findings is that some non-paedophilic men sexually victimise children because of antisocial tendencies whereby pubescent females are used for sexual gratification. People are likely to choose pornography that corresponds with their sexual interests; therefore men who are not paedophilic are more likely to choose adult pornography given ease of access over CSEM. The authors noted that their CSEM population was not a representative sample, and it may also be the case that men who display high rates of masturbatory behaviour in relation to images may be likely to show higher sexual responsivity when exposed to slides. Nonetheless these findings are important and, as suggested, should be replicated with non-forensic, non-clinical samples.

## CSEM as evidence of specific sexual interests

Glasgow (2010) noted the importance of downloaded CSEM (alongside other sexual material) to analyse unequivocal evidence of sexual deviance, alongside personality deviance known to be associated with risk. He used a series of cases to demonstrate that digital evidence of sexual images saved on devices provides insights into preferred material used to generate augmented sexual and interpersonal fantasies, which may evolve over time and change the types of images sought. This can reflect changing sexual interests, an escalation of instrumental behaviour and indications of growing compulsivity. CSEM also provides an accurate record of what the offender accessed which can be compared with self-reports. Polygraph studies indicate offender accounts often differ in relation to the age of the children in the images, the level of sexual victimisation and acknowledgement of previous contact offences (Bourke et al. 2015; Buschman et al. 2010). This issue may be critical in understanding paedophilic deviance in this population and what Seto (2009) described as a “seeming paradox” that this group (largely men) are likely to be paedophiles, yet few of them go on to have a detected contact sexual offence against a child, especially where there is no prior history of offending.



Of the few studies that have examined seized CSEM, most have focussed on the relationship between CSEM collections and contact victimisation. For example, Long et al. (2013) analysed data from a subset of 60 offenders: 30 convicted of CSEM and contact offences against children (dual offenders) and 30 with only known CSEM offences. The two groups differed in previous convictions, access to children and the number, proportion and type of CSEM viewed. Using the 5-point scale from UK Sentencing Advisory Panel (SAP) Guidelines, dual offenders possessed a higher proportion of level 3 and 4 images compared to CSEM-only offenders, of children with a smaller age-range, and most dual offenders possessed CSEM that matched the gender and age of their contact victims. The authors suggested a potential homology between CSEM possession, victim selection and offending behaviour. A further study by Smid et al. (2015) using 150 police files explored differences between CSEM-only suspects and dual offenders as well as variables related to direct victimization among CSEM-only suspects. A representative sample of identified CSEM for each offender was analysed using a modified version of the COPINE scale (Taylor et al. 2001). The last 5 items of this scale correspond to those in the SAP Guidelines (used by Long et al. 2013). CSEM-only suspects, where further investigation revealed direct victimisation, were more likely to have images containing victims below 5 years than CSEM-only suspects and more likely to have content depicting severe forms of victimisation. The sample sizes were small so the results should be interpreted with some caution. The authors concluded that whether their results suggest that possession of extreme CSEM truly reflects greater sexual deviance, as compared to those who possess less extreme material but have committed a contact offence against children, raises complex issues and may reflect how deviance is both operationalised and measured.

A final unpublished study by Eke and Seto (2017) also examined similarities between CSEM-collection characteristics and child victims. They used an existing sample of 372 cases of men convicted of CSEM-offences between 1995 and 2009 which included men who had pre, index, post or historical contact sexual offences against a child. Of the 372, 81 had committed a contact sexual offence, 39 had attempted online contact with a child (20 overlapping with the contact offenders). Nine of the CSEM group were excluded as their collection was only of images of their victim. The sample also included offenders who had CSEM they produced and collected (72 in total) which in the main was part related to either a previous, or the index, offence. Their results indicated that the average age of contact victims was significantly related to age preferences within CSEM collections. For example, the older the age of the victim, the greater the likelihood the collection of

CSEM focussed on pubescent content. CSEM content was also congruent with the gender of contact victims.

Seigfried-Spellar and Rogers (2013) addressed whether deviant pornography use follows a Guttman-like progression in that preferred image content may change over time. In this study 630 respondents from a survey sampling panel completed a questionnaire which assessed adult-only pornography, bestiality images and CSEM consumption. Respondents' age at which they commenced viewing adult pornography was used to determine whether those who engaged in adult pornography at a younger age were more likely to transition into deviant pornography use (bestiality and CSEM). Their results indicated that 254 respondents reported using non-deviant adult pornography, 54 used bestiality (sexual activity between an adult and/or child with an animal), and 32 used CSEM. Importantly, of the 32 CSEM-consumers, 60% ( $n=19$ ) also collected both nondeviant adult and animal pornography, 34% ( $n=11$ ) consumed only nondeviant adult pornography, and only 6% ( $n=2$ ) had just bestiality content. An earlier study by Endrass et al. (2009) of 231 Swiss men, who were charged with consumption of CSEM found that 40% of the sample were only in possession of CSEM while the rest possessed other types of deviant content such as bestiality, sexual use of excrement or brutality. One in 3 participants possessed at least three types of illegal pornography. Siegfried-Spellar and Rogers (2013) demonstrated that deviant pornography use followed a Guttman-like progression in that people who started using pornography at a younger age were also more likely to engage in deviant (bestiality or child) images compared to people who had a later age of onset for pornography use. These studies are not without their limitations, but they raise interesting questions about exclusivity of, and changing patterns of, CSEM use.

Temporal patterns of CSEM consumption were examined by Fortin and Proulx (2019) through images and meta-data extracted from the hard-drives of 40 people convicted of CSEM possession. A sample of 61,244 images was categorized by the age of the children in the images and the severity of the victimisation using the COPINE 10-point scale (Taylor et al. 2001) which ranges from 1 = non-erotic and non-sexualized pictures to 10 = sadistic/bestiality images involving children. Collecting CSEM followed four patterns. The first was a "Degenerating Spiral" (37.5% of the collections) which depicted a decrease in the age of the children over time and an increase in severity of victimisation. In 20% of the sample, a "Sexualized Adolescent" pattern was characterised by an increase in victimisation alongside an increase in the age of the children over the 24 months studied. The third pattern "Boy/Girl-Love" (20% of the sample) indicated a decrease in victimisation and a decrease in the age of the children. In the final pattern "De-escalation" (22.5%) the severity of the images

decreased over time and the victims became older. Case examples illustrate these different patterns. These cases indicated small numbers of very young children, a peak in children approximating 10-years and a gradual tail to 17-year-olds. Preference for children under 6 years was atypical: the most popular age was 6–12 years. Approximately 61% of the sample demonstrated exclusive age interests but for 16.9% the predominant age category collected was adults. The authors posit a variety of explanations for their results which includes the following: that CSEM collections are an indicator of sexual interests; that collectors become habituated to low-severity sexual content over time (congruent with patterns 1, 2 and 3 of the study) and seek out more egregious content; that collecting may be determined by the availability of content; and that CSEM-behaviour goes through a process of trial and error, discovery, and experimentation.

The fact that many of those who are identified or self-identify as using CSEM do not engage exclusively with this content is of interest but largely unexplored. Seto and Eke (2017) investigated correlates of sexual interest in children (CASIC) among convicted CSEM offenders focusing on information routinely available and which could not be faked. The goal was the development of a proxy variable for self-reported sexual interest in children. They were also interested in the amount of CSEM seized compared to the amount of adult pornography, which proved difficult because of missing data. Results indicated that six variables (scored absent or present) significantly predicted admission/diagnosis of sexual interest in children: (a) never married, (b) CSEM content included videos, (c) CSEM content included sex stories involving children, (d) evidence of interest in CSEM spanned 2 or more years, (e) volunteered in a role with high access to children, and (f) engaged in online sexual communication with a minor or officer posing as a minor. Within this sample, where data allowed, 90% also had adult pornography, and 87% had pornography depicting paraphilic themes (sadism, masochism or bestiality). Parallel research (but not related specifically to online sexual activity) has evidenced that exclusivity of paedophilic interest (using DSM-IV-TR criteria) has a strong relationship with sexual recidivism (Eher et al. 2015). In a study of a non-clinical sample of paedophilic men recruited from the Virtuous Pedophiles website, exclusivity of paedophilic interest was associated with having committed a sexual offence (self-reported and including arrest as well as conviction for sexual contact with a child aged 14 or younger or for viewing CSEM). However, Kuhle et al. (2017) in a sample of 190 undetected, self-identified pedo- and/or hebephiles found that exclusivity of pedohebephilia and offence-supportive attitudes did not show any significant relation with offending behaviour. It is unclear whether exclusivity in online sexual preferences expressed through possession of

CSEM is the same as exclusivity of sexual interest and in both national and supranational legislation “child” is defined as someone under the age of 18, meaning CSEM will include children who have reached sexual maturity. Lykins et al. 2010 used self-report, offence history and phallogometric assessment with gynephilic men exposed to slides and audiotaped narratives of interactions with prepubescent, pubescent adult males and females (as well as neutral activities). The highest levels of sexual arousal was showed to adult women with systematically decreasing arousal as female stimuli became younger and virtually no arousal to any male stimuli. Arousal to pubescent and prepubescent girls was higher than neutral stimuli.

## Conclusion

Definitions of sexual deviance and paraphilia have changed over time and the concept of normative sexual preferences is being constantly challenged in the choice of sexually explicit media by members of the general population. The assumptions that exposure to CSEM results in negative psychosexual outcomes in part arises from research with forensic populations and concerns about the relationship between violent sexual media and offences against both adults and children. More recently, research studies have suggested that exposure to online SEM is not associated with harm, although there is evidence that there is an association between some forms of sexual media and offending where there is an existing predisposition towards sexual aggression (Malamuth 2018). In the context of CSEM-offending, it has been argued that the digital evidence in seized collections of images can provide insight into the preferred material used to generate augmented sexual and interpersonal fantasies, which may evolve over time and may reflect changing sexual interests (Fortin and Proulx 2019; Glasgow 2010; Quayle and Newman 2015). However, the lack of exclusivity in this behaviour and the fact that CSEM possession is also seen in men with a history of adult sexual relationships, as well as occurring alongside a wide range of other pornographies does not readily fit with our current diagnostic models. Finally, what constitutes sexually deviant media is to some extent socially constructed and contested and this is evidenced in academic discourses (e.g. Sendler 2018) as well as online media.

**Conflict of interest** E. Quayle declares that she has no competing interests.

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